



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,292	12/12/2005	Jacek Kruszynski	Wolf&Lutz 102	2321
23474	7590	08/07/2008	EXAMINER	
FLYNN THIEL BOUTELL & TANIS, P.C.			HOWELL, DANIEL W	
2026 RAMBLING ROAD			ART UNIT	PAPER NUMBER
KALAMAZOO, MI 49008-1631			3726	
MAIL DATE		DELIVERY MODE		
08/07/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,292	Applicant(s) KRUSZYNSKI ET AL.
	Examiner Daniel W. Howell	Art Unit 3726

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-61 is/are pending in the application.
 - 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-16, 18, 20-40, 42, 43 and 46-61 is/are rejected.
- 7) Claim(s) 17, 19, 41, 44 and 45 is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 3-9-05 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3-9-05.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) Notice of Informal Patent Application
- 6) Other: ____.

1. Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Page 4 and claim 14 mention some sort of "angular offset," but it is not clear exactly what this is. Claim 14 adds the feature "relative to 180 degrees," and this point is not clear either.

2. Claims 2, 8-11, 14, 16, 20-37, and 39-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The locating surface and bearing-surface side of the last four lines of claim 2 and claim 10 seem to be two names for the very same object. The claim should be amended to provide consistent language. Claim 1 sets forth an "inclined deflecting chamfer," but claims 8-11 change this term to "central deflecting surface." The claims should be amended to provide consistent terminology. In claims 9, 11, 16, 20, and 39, the word "preferably" does not make it clear if the subject matter is being claimed or not. It is not clear what the "angular offset" of claim 14 is, or what "relative to 180 degree" means.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 46 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese '208. Figures 6a, 6b, and 6c of Japanese '208 shows inserts 1a, 2a, having a main cutting edge 11 that curves into angled cutting edge part 17, and an inclined deflecting chamfer 15. The

cutting edge 11 is inherently formed by a rake face and a flank/clearance surface. As seen from figure 6b, the cutting edges 11 form a positive incline, while the edges 14 form a negative angle. A bearing surface runs nearly parallel to the cutting edge in order to seat the insert on the drill body, and the apex line runs from the edge 17 to the bearing surface.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese 59-161208 in view of Nakamura et al (5829927). Figures 6a, 6b, and 6c of Japanese '208 shows inserts 1a, 2a, having a main cutting edge 11 that curves into angled cutting edge part 17, and an inclined deflecting chamfer 15, such that a gap is provided at the axis of rotation. The cutting edge 11 is inherently formed by a rake face and a flank/clearance surface. As seen from figure 6b, the cutting edges 11 form a positive incline, while the edges 14 form a negative angle. A locating surface runs nearly parallel to the cutting edge in order to seat the insert on the drill body, and it appears that this locating surface is brazed to the drill body. Japanese '208 lacks a screw fastening configuration to secure the insert and a radially outer guide bevel. Figures 2, 9, 16, and 17 of Nakamura et al show various guide bevel configurations 14a, 15a, 33A, 33B where the cutting insert contacts the hole wall. Such bevels prevent lateral deflection of the tool, but the reduced contact with the hole wall provided by the bevel reduces the amount of frictional heat which is created. The insert has a hole 27 extending from the rake face 26A to the rear surface 36B, and a screw 17 to fasten the insert to the drill body, such that the insert may be

removed and replaced when it is worn out. It is considered to have been obvious to have provided Japanese '208 with bevels as shown by Nakamura et al in order to reduce the amount of heat formed at the outer edge of the cutting insert. It is also considered to have been obvious to have provided Japanese '208 with the screw fastening arrangement of Nakamura et al in order to easily replace the inserts when they are worn out.

7. Claim 47-48 rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese 59-161208. The apex angle seen in figure 6b is under 170 degrees, but Japanese '208 does not explicitly set forth this angle. It is considered to have been obvious to have experimented with various apex angles and to have provided this angle of less than 170 degrees, and between 120 and 160 degrees, depending on the particular material which is being drilled and factors such as the hole size and rate of feed.

8. Claims 1, 3-13, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese 59-161208 in view of Nakamura et al (5829927) and Lindberg (4961672). Figures 6a, 6b, and 6c of Japanese '208 shows inserts 1a, 2a, having a main cutting edge 11 that curves into angled cutting edge part 17, and an inclined triangular deflecting chamfer 15, such that a gap is provided at the axis of rotation. The cutting edge 11 is inherently formed by a rake face and a flank/clearance surface. As seen from figure 6b, the cutting edges 11 form a positive incline, while the edges 14 form a negative angle. A locating surface seen roughly in figure 4 runs opposite to the flank/clearance surface in order to seat the insert on the drill body, and it appears that this locating surface is brazed to the drill body. Japanese '208 lacks a screw fastening configuration to secure the insert and a radially outer guide bevel. Figures 2, 9, 16, and 17 of Nakamura et al show various guide bevel configurations 14a, 15a, 33A, 33B where the cutting

insert contacts the hole wall. Such bevels prevent lateral deflection of the tool, but the reduced contact with the hole wall provided by the bevel reduces the amount of frictional heat which is created. It is considered to have been obvious to have provided Japanese '208 with bevels as shown by Nakamura et al in order to reduce the amount of heat formed at the outer edge of the cutting insert. The insert 13 of Lindberg has a hole extending from the flank 25 to the opposite surface 27, and a screw 14 to fasten the insert to the drill body, such that the insert may be removed and replaced when it is worn out. It is considered to have been obvious to have provided Japanese '208 with the screw fastening arrangement of Lindberg in order to easily replace the inserts when they are worn out. The central part of the cutting edge 17 of Japanese '208 is somewhat curved, but it is common to take a tangent to the curve in order to measure the angle formed with the main cutting edge. Claim 5 even acknowledges such a curved area. It is considered to have been obvious to have experimented with various chisel edge angles and to have provided this angle of less than 70 degrees, and between 20 and 40 degrees, depending on the particular material which is being drilled and factors such as the hole size and rate of feed. The apex angle seen in figure 6b is under 170 degrees, but Japanese '208 does not explicitly set forth this angle. It is considered to have been obvious to have experimented with various apex angles and to have provided this angle of less than 170 degrees, and between 120 and 160 degrees, depending on the particular material which is being drilled and factors such as the hole size and rate of feed. The height and diameter of the chamfer/deflecting surface are inherently a "multiple" of the width of the center gap, as dividing the height or diameter by the width provides a number/multiple. Looking at page 2 of Japanese '208, the page 2 is divided into four quadrants. Glancing through the upper right quadrant of this page to lines 13-14, it can be seen

that the gap distance S is 0.02mm to 0.3 mm. Regarding claim 13, the point angle seen in figure 6b is under 180 degrees. Regarding claim 18, figure 3 of Lindberg '672 shows a radial ridge 21 which fits in a radial surface 28 on the insert in order to locate the insert in the drill body. It is considered to have been obvious to have provided Japanese '208 with such locating surfaces in order to aid in transmitting forces between the insert and drill body, locate the insert in a desired location, and reduce forces on the screw.

9. Claims 15-16 and rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese 59-161208 in view of Nakamura et al (5829927) and Lindberg (4961672), as applied to claim 1 above, and further in view of Kubota (5314272). It is sometimes desirable to provide axially offset cutting inserts in order to cut chips of varying width or at different inner/outer locations in order to provide smaller chips to flow through the flutes. As seen from figure 1 of Kubota, insert 1 forms a cone P-V to V-Q, while insert 2 rotates on a cone line V'-Q', which is spaced slightly axially forward of the cone formed by insert 1. Columns 4, 5, and 6 of Kubota provide a discussion of the balancing of forces on the cutting inserts, and regarding claim 16, it is considered to have been obvious to have provided whatever axial offset is needed in order to balance the forces on the drill. It is considered to have been obvious to have provided Japanese '208 with one insert axially forward of the other as shown by Kubota in order to make chips of sizes that will easily flow through the flutes.

10. Claims 38-40 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese 59-161208 in view of Lindberg (4961672). Figures 6a, 6b, and 6c of Japanese '208 shows inserts 1a, 2a, having a main cutting edge 11 that curves into angled cutting edge part 17, and an inclined triangular deflecting chamfer 15, such that a gap is provided at the axis of

rotation. The cutting edge 11 is inherently formed by a rake face and a flank/clearance surface. As seen from figure 6b, the cutting edges 11 form a positive incline, while the edges 14 form a negative angle. A locating surface seen roughly in figure 4 runs opposite to the flank/clearance surface in order to seat the insert on the drill body, and it appears that this locating surface is brazed to the drill body. Japanese '208 lacks a screw fastening configuration to secure the insert. The insert 13 of Lindberg has a hole extending from the flank 25 to the opposite surface 27, and a screw 14 to fasten the insert to the drill body, such that the insert may be removed and replaced when it is worn out. It is considered to have been obvious to have provided Japanese '208 with the screw fastening arrangement of Lindberg in order to easily replace the inserts when they are worn out. The apex angle seen in figure 6b of Japanese '208 is under 170 degrees, but Japanese '208 does not explicitly set forth this angle. It is considered to have been obvious to have experimented with various apex angles and to have provided this angle of less than 170 degrees, and between 120 and 160 degrees, depending on the particular material which is being drilled and factors such as the hole size and rate of feed.

11. Claims 50-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese '208 in view of Shallenberger (5092718). Japanese '208 does not show a chip breaker. Figures 3, 4, and 6 of Shallenberger show a similar drill having inserts 30, 31 that leave a gap A at the axis of rotation. The insert has a straight cutting edge 46, a curved inner cutting edge 47, and a concave chip breaker groove 42. Note from figure 6 that the groove 42 extend along the main cutting edge and into the curved cutting portion 47, 50, and it extends into the vicinity of the corner of the insert. Regarding claim 54, 36 in figure 6 represents an outer secondary cutting edge, and the groove 42 extends into its vicinity. Regarding claim 56, figure 6 shows a bevel

between groove 42 and the main cutting edge 45. It is considered to have been obvious to have provided Japanese '208 with such conventional chip breaking grooves in order to make the chips flow more easily through the flutes. Regarding claims 53 and 55, it is considered to have been obvious to have extended the chip breaking groove into any area of the cutting insert deemed necessary to aid in chip flow.

12. Claims 50-55, 57, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese '208 in view of Kallio (2966081). Japanese '208 does not show a chip breaker.

Figures 5 and 9 of Kallio show a well known chip breaker groove 32 which is concave and, as seen by the phantom lines in figure 8, is also cylindrical concave. The groove extends along the cutting edge to the outer diameter of the tool, and it extends adjacent the chisel edge. It is considered to have been obvious to have provided Japanese '208 with the chip breaker groove as shown by Kallio in order to aid the chips in flowing through the flutes.

13. Claims 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese '208 in view of Bennett (3791001). Japanese '208 does not show a chip breaker. Bennett shows that it is common to provide a cutting edge with a series of chip breaking notches 89. It is considered to have been obvious to have provided any desired part of the cutting edge of Japanese '208 with such chip breaking notches in order to aid flow and removal of the cut chips.

14. Regarding claim 14, the examiner will take a guess and approach this claim as if it means that the two cutting edges do not run on the same conical angle during rotation. The Brabetz et al reference will be applied. Column 1 of Brabetz discusses German application P2655452.9, which the examiner has also cited, as it provides a little more context for what the "smearing" problem is.

15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese 59-161208 in view of Nakamura et al (5829927) and Lindberg (4961672), as applied to claim 1 above, and further in view of Brabetz et al (4231692). Japanese '208 does not disclose the two cutting edges having different angles with the axis of rotation. Figure 3 of Brabetz shows such a drill in which cutting edges 10 and 10' do not rotate on the same conical line. As discussed on column 1, this can aid in prevention of smearing of the hole surface. In view of this teaching of Brabetz, it is considered to have been obvious to provide the cutting edges of Japanese '208 with different angles in order to avoid smearing the workpiece.

16. Claims 20-37 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

17. Claims 17, 19, 41, and 44-45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the rounded transition of claim 5, the angular offset of claim 14, the axial offset of claims 15-16, and the indentations of claim 18 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure

Art Unit: 3726

must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

19. Any inquiry concerning the content of this communication from the examiner should be directed to Daniel Howell, whose telephone number is 571-272-4478. The examiner's office hours are typically about 10 am until 6:30 pm, Monday through Friday. The examiner's supervisor, David Bryant, may be reached at 571-272-4526.

In order to reduce pendency and avoid potential delays, Group 3720 is encouraging FAXing of responses to Office actions directly into the Group at FAX number to 571-273-8300. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a USPTO deposit account. Please identify Examiner Daniel Howell of Art Unit 3726 at the top of your cover sheet.

/Daniel W. Howell/
Primary Examiner, Art Unit 3726